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SECULAR PGR STOKES COEFFICIENTS VIA ICE MODEL IMPROVEMENTS, QUARTER CENTURY-LONG DATA RECORDS AND HIGH DEGREE AND ORDER FIELD RECOVERY

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Measurement of the Earth's time-varying gravity field by laser ranging to passive geodynamics satellites now has a 24 year-long history. With the upcoming CHAMP, GRACE and GOCE gravity missions having lower orbits and sub-decadal lifetimes, it is important to understand how the zonal rate coefficients, \dot{J}_n recorded over past quarter century may aid in constraining possible secular trends in polar ice sheet mass balance. Ice sheet balance, and continental hydrology in general, probably vary with both secular and nonsecular components over the relevant observational window (1976-2010, and beyond). Postglacial rebound (PGR), in contrast, has a robustly modelable and solely secular component that is embedded in the observed \dot{J}_n spectra. It should, in fact, be a distinguishable portion of the temporally varying Stokes coefficient (\dot{C}_{nmj}) spectra, common to both LAGEOS-class and GRACE/GOCE-class gravity data. An improved prediction for the odd zonal PGR signal motivates, in turn, a new attempt to source the observed 20th Century rise in sealevel. A preliminary analysis indicates that the \dot{J}_n spectra retrieved from LAGEOS-class satellite data are consistent with an ongoing positive contribution by Antarctica to late-20th Century sealevel rise at a rate of 0.15 mm/yr, or greater.

Abstracts to be submitted on or before December 15, 1999 to

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